

7-8 EDWARD VII.

SESSIONAL PAPER No. 19b

A. 1908

CANADA  
DEPARTMENT OF PUBLIC WORKS



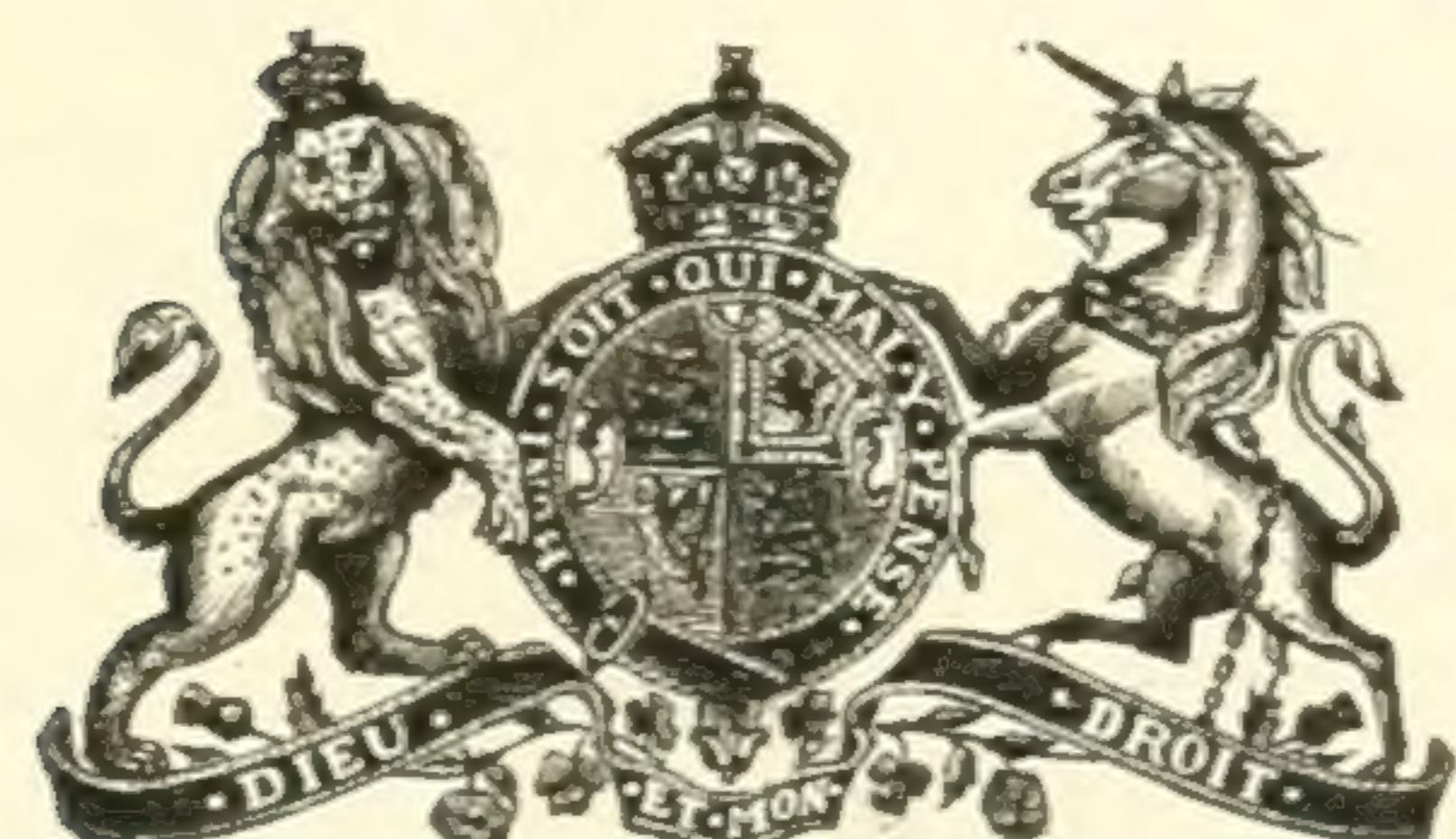
INTERNATIONAL WATERWAYS COMMISSION

TO DECEMBER 31, 1907

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SUPPLEMENT TO REPORT OF 1907

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OTTAWA

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# INTERNATIONAL WATERWAYS COMMISSION

## SUPPLEMENTARY REPORT TO DECEMBER 31, 1907

OTTAWA, 9th March, 1908.

Honourable WILLIAM PUGSLEY,  
Minister of Public Works,  
Ottawa, Ont.

Mr. MINISTER.—The Canadian members of the International Waterways Commission have the honour to submit the following progress report covering their work for the calendar year ending December 31st, 1907.

Dr. W. F. King, a member of the commission since its organization, having resigned, Mr. W. J. Stewart, the Dominion Hydrographer, was appointed in his place.

### CHICAGO DRAINAGE CANAL.

The Commission during the year, agreed upon a joint report with regard to the diversion of water from Lake Michigan by the Chicago Drainage Canal, which will be found in Volume 2, of the report of the Minister of Public Works for the year 1906, at page 173. The commission have agreed upon the following recommendations:

The waters of Lake Michigan in the United States, the waters of Georgian bay in Canada, and the waters of Lake Superior, partly in the United States and partly in Canada, all form sources of supply to the Great Lakes system, finding their way by the St. Lawrence to the sea. All are interdependant, and there can be no diversion from any of them without injury to the whole system. By Article XXVI. of the Treaty of 1871 ‘navigation of the River St. Lawrence, ascending and descending from the forty-fifth parallel of north latitude, where it ceases to form the boundary between the two countries, from, to, and into the sea, shall forever remain free and open for the purposes of commerce to the citizens of the United States, subject to any laws and regulations of Great Britain, or of the Dominion of Canada, not inconsistent with such privileges of free navigation.’ It is desirable that in any treaty arrangement the waters of Lake Michigan, Georgian bay, and all other waters forming part of the Great Lakes system should be declared to be ‘forever free and open for the purposes of commerce’ to the citizens of the United States and the subjects of His Britannic Majesty, subject to any laws and regulations of either country, and not inconsistent with such privilege of free navigation.

•The preservation of the levels of the Great Lakes is imperative. The interest of navigation in these waters is paramount, subject only to the right of use for domestic purposes, in which term is included necessary sanitary purposes. In our report of November 15, 1906, upon the application of the Minnesota Canal and Power Company to divert certain waters in Minnesota, we recommended, among other things, ‘that any treaty which may be entered into should define the uses to which international waters may be put by either country without the necessity of adjustment in each instance, and would respectfully suggest that such uses should be declared to be (a) uses for necessary domestic and sanitary purposes; (b) service

7-8 EDWARD VII., A. 1908

of locks for navigation purposes; (c) the right to navigate.' It is our opinion that so far as international action is concerned a treaty provision of that kind is all that is required in this case. We accordingly renew our recommendation of November 15, 1906, just quoted.

A careful consideration of all the circumstances leads us to the conclusion that the diversion of 10,000 cubic feet per second through the Chicago river will, with proper treatment of the sewage from areas now sparsely occupied, provide for all the population which will ever be tributary to that river, and that the amount named will, therefore, suffice for the sanitary purposes of the city for all time. Incidentally it will provide for the largest navigable waterway from Lake Michigan to the Mississippi river, which has been considered by Congress.

We therefore recommend that the government of the United States prohibit the diversion of more than 10,000 cubic feet per second for the Chicago Drainage Canal.

Following this report, the Secretary of War of the United States, under date of March 14th, 1907, declined to grant a permit, for which application had been made by the trustees of the Sanitary District at Chicago, to reverse the flow of the Calumette river. The board, nevertheless, at its session of September 18, 1907, decided to proceed with the construction of the proposed diversion channel, but to first give 'notice of its intention so to do to the Secretary of War and to the Attorney-General that they may, if they see fit, take such steps as they think proper to protect the rights, if any, of the General Government in the premises before the expenditure by the district of any considerable portion of the eight or ten millions of dollars necessary to construct the said channel.' They commenced work on a small scale in October, 1907, as a matter of form, whereupon, at the request of the War Department, the Department of Justice instituted injunction proceedings which are now pending.

The issue raised is one of the greatest moment. If the level of the Great Lakes system is to be maintained, the preservation of the same must necessarily depend upon the joint action of the two governments, as the withdrawal of water from Lake Michigan, in the United States, Georgian bay in Canada, or elsewhere in either country, must necessarily be injurious to the whole system.

Vast interests are involved. The amount by which the mean level will be lowered by the discharge of 10,000 cubic feet now authorized through the Chicago Canal, is estimated as about six inches in Lakes Huron and Michigan, about five inches in Lake Erie and about four inches in Lake Ontario. Any further diversion would mean the necessary expenditure of a very large amount of money to restore depths in harbours and to maintain a uniform draught of fourteen feet in our canal system.

The issue is not one between ourselves and citizens of the United States. The Lake Carriers' Association, representing a great United States investment on these lakes, strongly protests against further diversions, other than those which are absolutely essential for sanitary purposes. Our interests are small compared with theirs, but, in the not very distant future, the development of our Northwest will materially increase our interest in maintaining this great highway, without which such development would not be possible. Vast as the traffic is now, what man can tell to what proportions it will reach in another twenty-five years, or what interests will then be involved?

It will be noticed that the commission find that it is desirable that 'in any treaty arrangement the waters of Lake Michigan and Georgian bay and all other waters forming part of the Great Lakes system should be forever open, for the purposes of commerce, to the citizens of the United States and the subjects of His Britannic Majesty, subject to any laws and regulations of either country not inconsistent with such privileges of free navigation.'

By the treaty of 1871, the St. Lawrence river in Canadian territory was declared to be open and free forever to the citizens of the United States for the purposes of commerce. As set forth in the report, the whole system of waterways forming the

## SESSIONAL PAPER No. 19b

Great Lakes system are interdependent and there should be a common right of user of the whole.

The conflict at Chicago shows the absolute necessity of some treaty arrangement for the preservation of the system and the adoption of certain principles which will control its use. Here we have a vast expanse of navigable water, partly in one country and partly in the other, inseparable and indivisible on national lines. Neither country has any right of property in it and of necessity its use must be in common. It follows, therefore, that such use must be governed and controlled by some joint body. The present International Waterways Commission was created at the suggestion of the United States government, the congress of which passed and approved on June 13, 1902, of an Act containing the following provision:—

The President of the United States is hereby requested to invite the government of Great Britain to join in the formation of an international commission, to be composed of three members from the United States and three who shall represent the interests of the Dominion of Canada, whose duty it shall be to investigate and report upon the conditions and uses of the waters adjacent to the boundary lines between the United States and Canada, including all of the waters of the lakes and rivers whose natural outlet is by the River St. Lawrence to the Atlantic ocean, also upon the maintenance and regulation of suitable levels, and also upon the effect upon the shores of these waters and the structures thereon, and upon the interests of navigation by reason of the diversion of these waters from or change in their natural flow; and, further, to report upon the necessary measures to regulate such diversion, and to make such recommendations for improvements and regulations as shall best subserve the interests of navigation in said waters. The said commissioners shall report upon the advisability of locating a dam at the outlet of Lake Erie, with a view to determining whether such dam will benefit navigation, and if such structure is deemed advisable, shall make recommendations to their respective governments looking to an agreement or treaty which shall provide for the construction of the same, and they shall make an estimate of the probable cost thereof.

This Bill was enacted because of the manifest necessity of some joint regulation and control. Your Commission thought it expedient to first establish principles governing the use and diversion of boundary waters. Once proper principles have been agreed upon, their application by a permanent board must necessarily lead to a uniform course of action, whereas if special matters are dealt with by special commissions, all manner of inconsistent conclusions might and likely would be arrived at. Once principles are agreed upon, and consistently applied, neither country will obtain any advantage. The Commission by their various reports made suggestions and recommendations, from which the following conclusions were drawn:—

'1. The great lakes system, including Lake Michigan and Georgian bay, should be made a common highway for the purposes of navigation to the people of both countries.

'2. The right of either country with respect to such waters is the right of user only.

'3. The primary right of user is for domestic uses (including necessary sanitary purposes) and the services of locks and navigation canals.

'4. Subject to these uses, the use for navigation shall be paramount to all others.

'5. No diversion of these waters shall be permitted to the injury of navigation interests, save such diversions as are necessary for the preservation of the public health (sanitary purposes and domestic use) and service of locks of navigation canals.

'6. Where temporary diversions of such waters without injury to the interests of navigation are possible, they should be permitted so that each country, so far as is practicable, shall receive an equal benefit. This principle is applicable to diversions for power purposes in the St. Mary's and St. Lawrence rivers.

'7. As to streams which cross the international boundary, no diversion of such streams or their tributaries should be permitted in either country so as to interfere

7-8 EDWARD VII., A. 1908

with the natural flow thereof to the injury of private or public rights in the other country; nor should any obstruction be permitted in such streams in one country to the injury of public or private rights in the other.

'8. In Niagara river, diversions would not interfere with navigation, but there a special consideration, the preservation of the scenic beauty of the falls, was brought to play. It was found, however, possible to divert about double the quantity of water on the Canadian side to that possible on the other side, without material injury to the scenic effect.

'9. The Commission have not, for lack of jurisdiction, suggested any principle governing the use, for irrigation purposes, of waters which cross the international boundary, but some principle should be adopted which would have general application. We respectfully submit that all the principles so far adopted by the Commission commend themselves as worthy of adoption.'

The boundary line between these two countries extends across the continent. For a great distance an imaginary line is drawn through boundary waters; elsewhere numerous streams cross and sometimes recross the international boundary. The increased value of water for power and irrigation purposes has given rise to new questions which must be met and settled in some way.

That can only be done effectively by a treaty arrangement between the two countries, as only in that way can joint federal jurisdiction be with certainty asserted. Special commissions, which are the outcome of local disputes, are necessarily partial. The commissioners are advocates. A permanent board removed from local prejudice would apply the principles impartially and should be provided for in any treaty arrangement.

#### INTERNATIONAL BOUNDARY IN LAKE ERIE.

During the year the Joint Commission have made a report dealing with this matter, which will be found in Volume 2, of the report of the Minister of Public Works. The matter was referred to your Commission by direction of the Secretary of State of the United States with a view to having 'the exact international water boundary line on Lake Erie marked by buoys,' thereby enabling fishermen to readily ascertain the location of the boundary line and also to ascertain whether the United States and Canadian charts of the locality agreed as to the distance to be logged from the gas buoy at Erie, Pennsylvania, to the boundary on the usual fishing ground outside Long point.

At page 230, volume 2, of the Annual Report of the Department of Public Works, for the year 1907, will be found a full account of the 6th Article of the Treaty of Ghent, and the recommendations made by the Commission.

No authority has yet been given to the Commission to proceed further with the matter.

#### RICHELIEU RIVER.

Under the direction of the Department of Public Works, a report was prepared in 1902 upon the subject of damage by overflow of the Richelieu river and a plan was submitted for correcting the evil. At its last session, Parliament appropriated \$10,000 for the proposed works, which would be wholly within Canadian territory, but, inasmuch as they might affect the interests of the United States or of its citizens on Lake Champlain, our government referred the matter to the International Waterways Commission. The question was considered by the Commission as a whole and dealt with by passing the following resolution:—

'Whereas certain valuable lands in the valley of the Richelieu river, the outlet of Lake Champlain, are subject to damage by overflow; and

'Whereas a plan for the reclamation of said lands, submitted by Resident Engineer J. B. Michaud, April 7, 1902, to the Canadian government, was referred by that

## SESSIONAL PAPER No. 19b

government to the International Waterways Commission under date of May 6, 1907; and

‘Whereas the international question involved relates only to the effect of the proposed works upon the interests of the United States or of its citizens upon Lake Champlain; and

‘Whereas the average level of Lake Champlain is 96·1 feet above tide water, New York, and the monthly mean level during floods is about 100.

‘Resolved, That it is the opinion of the International Waterways Commission that the works proposed can be constructed without injury to the interests of the United States or its citizens upon Lake Champlain, provided a movable dam be constructed at St. Johns, and so operated that the flood waters of Lake Champlain shall be allowed to rise to a monthly mean level of 97 and the level of the lake shall hereafter be maintained at or above 95.’

## POWER DEVELOPMENT NEAR LONG SAULT ISLAND.

The application of Mr. Smith L. Dawley for a permit to construct works in the River St. Lawrence near Long Sault island was refused.

## GRAND FALLS POWER COMPANY, LIMITED, RIVER ST. JOHN.

By Order in Council, dated May 9, 1907, a copy of which is appended and marked A, the application of the Grand Falls Power Company, Limited, for permission to construct hydraulic works on the River St. John was referred to our Commission. The United States section, having doubt as to its jurisdiction over the question, have requested instructions from the Secretary of War, before proceeding to consider the subject-matter of this reference.

## POWER WORKS ON THE ST. LAWRENCE RIVER AT OR NEAR BARNHART ISLAND.

A Bill was introduced into Congress, but not passed, at its last session, to authorize construction, maintenance, operation and use of dams, canals, reservoirs, &c., in or across the St. Lawrence river, in the State of New York, or so much thereof as lies within the jurisdiction of the United States, and in and across the lands adjacent to the said river, at such point or points, upon or adjacent to the south shore of the said river, near Long Sault and Barnhart islands, and upon the said islands and between the said islands, or either of them, and the shores of said river and Sheek island (but not across the international boundary line, unless consented to by the Dominion of Canada), subject to the approval of the Secretary of War of the United States. A copy of the said Act is appended and marked B. It will be seen that Section 4 provides :—

‘That the consent of the proper authorities of the Dominion of Canada should be obtained before the work herein authorized is commenced.’

The Long Sault Development Company was incorporated by the State of New York on May 23, 1907, for the purpose of proceeding with these works. A Canadian company, known as the St. Lawrence Power Compay, has been formed to act in conjunction with the United States company and both joined in an application to our Commission for approval of their plans. .

The St. Lawrence is not, at this point, navigable for vessels in general, but has been used, in passing down the river, by the Richelieu and Ontario Navigation Company’s steamers continually and by small pleasure boats and for the transport of timber rafts. The passage up is by way of the Cornwall canal. The proposed works involve the construction of dams across South channel (south of Long Sault island) across the main channel between Long Sault and Barnhart islands and across the east end of Little river between the north side of Barnhart island and the Cornwall canal. In

7-8 EDWARD VII., A. 1908

addition to these dams it is proposed to move lock 21, Cornwall canal, from its present position to the vicinity of lock 20, to deepen and improve Little river and to construct a lock in South channel.

The Commission have adopted the principle that no development would be permitted by the diversion of boundary waters for power purposes to the injury of navigation interests, but, where such developments are possible without interference with the interests of navigation, then they should be permitted, and, as far as practicable, in such a way that each country would be equally benefitted.

The matter was brought before the Commission at a meeting in Toronto when representatives of both power companies and their experts were present and explained the proposal. They urged that a large development of 50,000 horse-power and over could be obtained by the improvement suggested, and their experts contended that, instead of being an impediment to navigation, the proposed changes would much improve the conditions in that regard. The issues involved were, in our opinion, of a most serious character, and the Canadian section decided to call a special meeting in Montreal at which a public hearing would be given to all parties interested.

That meeting was held on November 6, in the Board of Trade rooms. The minutes of the meeting will be found in appendix C. Since that meeting, protests have been received against the allowance of the proposed works from the council of the Montreal Board of Trade, who urged among other things :—

' That in the case of a mighty river like the St. Lawrence, it is difficult, if not impossible for engineers to forecast the actual effect of entirely damming its swift flowing waters, and that there is a general conviction among the riverside population above Cornwall that the proposed works would cause such an overflow into the surrounding country as would involve damage to the extent of many millions of dollars, and your memorialists believe that they would also render useless some existing water powers in that vicinity.

' That the proposed damming of the river channels would, of course, prevent all boats from shooting the Long Sault rapids, the finest rapids in the river, and that the delay which the passage through the canal would cause, would render it impossible for boats to travel through the Thousand islands by daylight and reach Montreal the same evening, and thus two of the chief attractions for passenger travel on the St. Lawrence trip would not be available, with the result that the country would lose the large tourist traffic which is a source of profit to the river steamers and to the places visited.

' That while the promoters of the scheme claim that the interests of commercial navigation would not suffer were it adopted, as cargo boats do not run the rapids, the rafting business seems to have been ignored in this connection.

' That it is estimated that the rafts which pass down the river in each season contain over 300 cribs of timber, and that, were these cribs forced to pass through a canal instead of shooting the rapids, much time would be lost, and they would, moreover, by blocking the canal, seriously interfere with other traffic.'

The Shipping Federation of Canada also object on the following, among other grounds :—

' 1. That said dams would completely block the river so far as navigation is concerned and necessitate the vessels and rafts that use the river being diverted to the already congested canal, thereby seriously interfering with the present conditions of navigation.

' 2. That any scheme that would place the control of the waters of the St. Lawrence river in the hands of private corporations would, in the opinion of this federation, be giving away a national heritage. At present there is, at times, congestion in our canals, and to transfer the passenger boats and the rafts, would further increase the present delays that take place in getting the freight to the ports of Montreal, Quebec, Three Rivers and other ports in the lower St. Lawrence.

## SESSIONAL PAPER No. 19b

'3. That the canal and river system, we hold, should not be interfered with even in the slightest degree. We have 72½ miles of canals, extending from (but not taking in) Sault Ste. Marie, by the Welland to the St. Lawrence, on which the government have expended eighty millions of dollars, and the total tonnage passing through these canals in 1903 amounted to over 1,600,000 tons, showing the magnitude of the commerce which is now using the canals and seeking Montreal as an export point.'

The Dominion Marine Association also protest upon the ground that:

'The said proposals include the construction of dams across the St. Lawrence river from the south shore to the foot of Long Sault island, from the said island to Barnhart island, and from that island to the Canadian shore, which dams will completely block the river, so far as navigation is concerned, and will necessitate passage up and down streams in all cases by way of locks.

'Vessels now enjoy the right of free navigation down stream in the channel north of Long Sault island, and South channel is also used for transportation down stream of rafts of timber of great value.

'The enforced lockage of these vessels and rafts and the enforced construction of the rafts in sections of suitable size for lockage, as well as the delays to be suffered during the period of construction of the proposed works, would very prejudicially affect not only the immediate interests involved, but also all other vessels which have to share the facilities for lockage.

'If the proposed works are built, the breaking of a dam or disabling of one or more locks, might completely bar all navigation for a considerable time, cut off the passage of rafts, and prevent even light vessels and barges from carrying the produce of the west down stream in the free channels, as has been done in the past.

The St. Lawrence channels in question are part of the great natural highway from the Great Lakes to the sea, and it appears contrary to reason to oppose any obstacles or barriers whatever in the way of their free navigation, and utterly preposterous to subject these navigable waters, the heritage of the people, to the direct or indirect control of private or foreign corporations.'

And conclude by resolution, as follows:—

'That the said proposals, apart altogether from any engineering problems involved or any question of water levels or depths, are prejudicial to navigation interests.

'That no additional or improved locks at this point, of the character so far suggested, can compensate for the disadvantages, temporary as well as permanent, entailed in the scheme, to justify in the slightest the proposed interference with the free channels.

'That the Dominion Marine Association be placed on record as protesting absolutely against the proposed works.'

The Richelieu and Ontario Navigation Company and the Calvin Company, Limited, have also filed objections.

On the other hand, we have a demand for the use of this water, for the development of electrical energy, which undoubtedly would be a material benefit both to Canadian and United States interests within a reasonable distance of the proposed works. The real issue is: What would be the effect upon navigation interests? It is conceded that these interests are paramount and must not be injuriously affected. Your Commission are not yet in possession of sufficient data to form an opinion on the matter, but are making every effort to obtain the same. Independent expert advice is being sought. The matter will not be dealt with hastily, but is of such vital importance that your Commission would be glad of any information that would assist them in arriving at a wise and proper conclusion.

## RAINY RIVER IMPROVEMENT.

By Order in Council dated May 6, 1907, reference was made to our Commission of this matter, as follows:—

‘On a memorandum dated May 2, 1907, from the Acting Minister of Public Works, stating that, in order to improve the navigation of Rainy river, a navigable stream forming part of the boundary between the Province of Ontario and the State of Minnesota, in which the existence of two rapids renders the navigation difficult and dangerous, the Chief Engineer of the Department of Public Works was requested to cause an examination and report to be made. In this report Mr. J. W. Fraser strongly recommends the construction of a dam at the foot of Long Sault rapids, a section of which will abut on United States territory. This dam, built of timber, would raise the water to a sufficient height to obliterate both the Manitou and Long Sault rapids, which interrupt the navigation of the river about the middle of its course.

‘The minister further states that Parliament at its last session provided an amount of \$50,000 towards the commencement of this work.

‘The minister, in view of Rainy river being an international stream, recommends that before any action is taken the question of its improvement be submitted to the International Waterways Commission for consideration and report.

‘The Committee submit the same for approval.’

The United States section, having doubt as to their jurisdiction, have asked their government for further instructions. In the meantime, as the matter was pressing, and with their concurrence, our section have reported as follows:—

‘1. Rainy river is an international waterway connecting the lake of the same name with the Lake of the Woods, and is 85 miles in length. The stream between the Lake of the Woods and the foot of the Long Sault rapids, a distance of 40 miles, is, or can readily be made, navigable for boats of 6 to 7 feet draught for the full season of navigation, being controlled by a dam at Kenora; but its further use, during the low-water period, is prevented by the Long Sault and Manitou rapids, which lie approximately mid-way between the Lake of the Woods and Fort Francis; the Long Sault are  $1\frac{1}{2}$  miles in length and have a total rise (at extreme low water) of  $7\frac{1}{2}$  feet; the Manitou are located  $6\frac{1}{2}$  miles farther up, and are about 200 feet in length, having a total rise of 2·0 feet. Between these two obstructions there is a rise of 1·9 feet, and between the head of the Manitou and the foot of the Fort Francis rapids, a distance of 36 miles, the rise is 14·4 feet; making a total ascent in the 44·5 miles of river to be improved of 25·5 feet at extreme low water. The banks of the river along the reach under consideration are generally steep and from 28 to 40 feet high, so that the flood waters overrun but very few acres.

‘2. The proposition contemplates the erection of a dam at the foot of the Long Sault rapids capable of raising the water 11 feet above extreme low water and flooding out both rapids. In connection with the dam is to be a lock (approximately 55 by 200 feet in size) for the passage of vessels. Because this dam must cross into United States territory, the International Waterways Commission have been asked to consider and report upon the improvement.

‘3. We have examined the records of the Department of Public Works of Canada pertaining to this project, and find there maps and other data, obtained from actual surveys, which verify the figures and description given above.

‘4. The effect of backwater during the low-water stage cannot be accurately determined from the meagre data at hand, but an approximation would seem to limit its effect to a point 5 miles above Manitou rapids. The effect of backwater at high water is hardly determinable in the absence of gauge records at Fort Francis during floods, but it is not believed that it can be seriously detrimental. The new low-water level in the reach between Manitou and Long Sault rapids will be, at most, four feet higher than at present and will, therefore, cause no flooding of the shores.

## SESSIONAL PAPER No. 19b

‘5. Whilst at present, during the freshets, the water rises 16 feet above extreme low water, it appears certain that, under new conditions with proper controlling dams both above Fort Francis and at the new dam, and the increased cross-sections in the vicinity of the two lower rapids, the new flood level need be very little above the new low water. Such a control will improve navigation and maintain nearly constant the water-power head at Fort Francis and Couchiching. It is taken for granted that the design of the dam and lock will be such as to permit the passage of vessels at all times, whether the river is in flood or not; otherwise the highest interests of navigation would not be subserved.

‘6. After considering the project, no objection can be seen to the proposed improvement; on the contrary, it has much to commend it.

‘7. In this matter the members of the United States Section of the International Waterways Commission claim to have no jurisdiction, and this section therefore respectfully recommends that the Canadian government request the government of the United States to grant them permission to carry out the proposed works.’

## REGULATION OF LAKE ERIE.

Ever since the formation of the commission we have been considering, from time to time, the question of erecting a dam or dams in the Niagara river, with a view to maintaining the level of Lake Erie. In the Act of Congress creating the United States section of this commission this reference is made to the matter:—

‘The said commissioners shall report upon the advisability of locating a dam at the outlet of Lake Erie, with a view to determining whether such dam will benefit navigation, and if such a structure be deemed advisable, shall make recommendations to their respective governments looking to an agreement or treaty which shall provide for the construction of the same, and they shall make an estimate of the probable cost thereof.’

A large amount of labour has been expended upon the investigation of the problem. Several schemes have been proposed. The Commission have agreed that no works would be authorized, the effect of which would be to lower the levels in Lake Ontario or the St. Lawrence river. Of course, if some scheme can be devised which will improve navigation in Lake Erie without injury to other interests, it should be supported, but the whole matter will receive most careful consideration before any recommendation is made.

## NIAGARA FALLS POWER DEVELOPMENT.

Owing to the very great public interest in this subject, it is perhaps desirable that we should repeat some of the matter contained in our previous reports.

Soon after the organization of our Commission, we found the members of the United States section anxious to deal with the subject of the preservation of Niagara falls. Action was, no doubt, forced upon them by public opinion generally, as well as by the personal views of President Roosevelt, as expressed in his message to Congress. The American Civic Association, having a very large membership scattered throughout the Union, was pledged to work together in order to preserve the scenic effect of the falls, ‘in all their beauty and majesty.’ While Canadian feeling had not been aroused upon the subject, it was certainly not desirable that we should put ourselves (if it could possibly be avoided) on record in opposition to this movement.

Up to the time that the agitation took voice and was emphasized by the President’s message, corporation after corporation had obtained charters to divert water from the Niagara river, above the falls. The result, if all had gone into operation, undoubtedly would have been to completely destroy the scenic effect. Fortunately only two companies in New York state and three on our side of the river had actually constructed works. In New York state the Niagara Falls Hydraulic and Manufacturing Company and the Niagara Falls Power Company had works in course of con-

7-8 EDWARD VII., A. 1908

struction requiring about 18,100 cubic feet per second. On the Canadian side the Queen Victoria Niagara Falls Park had entered into leases and agreements, ratified by the Ontario Legislature, with three companies :—

1. The Canadian Niagara Falls Power Company, 110,000 horse-power, requiring 8,600 cubic feet per second.
2. Ontario Power Company, 180,000 horse-power, requiring 11,700 cubic feet per second.
3. Electrical Development Company, 125,000 horse-power, requiring 10,750 cubic feet per second.

The Joint Commission had agreed, as one of the principles which should govern the use of boundary waters, that, where there could be temporary diversions without injury to the interests of navigation for the purpose of developing power, they should be allowed, so that each country, so far as was practical, would receive an equal benefit. Neither country has any right of property, but only a right of user, in these flowing waters. The paramount right to use the great water system, starting with Lake Superior and finding its way by the St. Lawrence to the sea, is for navigation purposes, but as temporary diversions are possible at Sault Ste. Marie, on the Niagara river, on the St. Lawrence river and elsewhere without injury to the interests of navigation, it is, of course, desirable that they should be permitted, and we think it is manifest that each country is entitled to an equal benefit therefrom.

From Niagara river, above the falls, for some distance, water could be diverted, on either side without any injury to the interests of navigation; in fact, such interests would not have been affected if all the water had been so removed and returned to the river again farther down, and before reaching the point where navigation became possible. The only objection, therefore, to such temporary diversion of water is the effect upon the scenic beauty of the falls. The diversion, on our side, being almost entirely below the crest of the rapids, has no appreciable effect upon the flow over the American falls, and as the flow of water over the Canadian or Horseshoe falls is seven times greater than that over the American, it was felt that we could be permitted to take a larger quantity than it was possible to take upon the United States side without injury. The citizens of the United States had also diverted 10,000 cubic feet of water per second at Chicago which in its natural course would have flown over Niagara, and this was taken into consideration.

It is manifest that some arrangement must be arrived at between the two countries with regard to the regulation and use of boundary waters, otherwise chaos will prevail. At Niagara, on each side of the river, charters had been granted under which water in unlimited quantities could have been taken at points farther up the river. On our side it was sought to use the Chippewa river to drain the waters of Niagara into a new outlet—a canal to be built to a point near St. David's. Another Canadian charter sought to divert the waters of Lake Erie to a point near Jordan. On the New York side there was no limitation to the water which could be taken under several charters.

All these proposed developments would affect, more or less seriously, the level of Lake Erie and all are objectionable on that account and wholly opposed to the principle adopted by the Commission. The direct diversion from Lake Erie to the Jordan river is especially objectionable. The diversion of 10,000 cubic feet per second would have a more serious effect upon the level of Lake Erie than the diversion from Lake Michigan, at Chicago, of a like amount. It would mean the reduction of the lake level by more than six inches.

It is needless to say that navigation interests of both countries would refuse to submit to such an injustice. Chicago sought to justify itself by the necessity of preserving the public health, and evidenced their good faith by the expenditure of about fifty million dollars upon the project. Here navigation interests would be very seriously affected merely for the purpose of a profit by the production of power.

## SESSIONAL PAPER No. 19b

The Joint Commission succeeded in agreeing upon the following conclusions:—

The Commission has made a thorough investigation of the conditions existing at Niagara falls, and the two sections have presented reports to their prospective governments setting forth these conditions to which attention is invited. The following views and recommendations are based upon a careful study of the facts and conditions set forth in these reports.

1. In the opinion of the Commission, it would be a sacrilege to destroy the scenic effect of Niagara falls.

2. While the Commission are not fully agreed as to the effect of diversions of water from Niagara falls, all are of the opinion that more than 36,000 cubic feet per second on the Canadian side of the Niagara river or on the Niagara peninsula, and 18,500 cubic feet per second on the United States side of the Niagara river, including diversions for power purposes on the Erie canal, cannot be diverted without injury to Niagara falls as a whole.

3. The Commission, therefore, recommend that such diversions, exclusive of water required for domestic uses or the service of locks in navigation canals, be limited on the Canadian side to 36,000 cubic feet per second, and on the United States side to 18,500 cubic feet per second (and in addition thereto a diversion for sanitary purposes not to exceed 10,000 cubic feet per second, be authorized for the Chicago drainage canal), and that a treaty or legislation be had limiting these diversions to the quantities mentioned.

4. The effect of the diversion of water by the Chicago drainage canal upon the general navigation interests of the Great Lakes system will be considered in a separate report.

5. The Canadian section, while assenting to the above conclusions, did so upon the understanding that in connection therewith should be expressed their view that any treaty or arrangement as to the preservation of Niagara falls should be limited to the term of twenty-one years, and should also establish the principles applicable to all diversions or uses of waters adjacent to the international boundary, and of all streams which flow across the boundary.

When the Park Commissioners with the full authority of the legislature entered into their agreements with the three companies, no one anticipated or, if they did anticipate, then foretold the consequences. The Park Commissioners were getting large rentals, and the general opinion undoubtedly was that it was desirable to have these industries established. It is only fair to say that their works are magnificent results of the highest engineering skill, and that all the companies have joined with the commissioners in the endeavour to preserve, as far as possible, the natural beauty of the park.

It, perhaps, would have been wise if development had been limited to the generation of electricity for distribution in Canada. In that case we would most likely have had only one corporation up to this time, and, moreover, would have had the Canadian market fully supplied. It was undoubtedly the intention, when these leases were made, that each of the companies would find a market in New York state for part of their power, and also that each of them would supply power in Canada. It is also evident from the agreements that it was contemplated that the companies would themselves build transmission lines and deliver power both in the State of New York and the Province of Ontario. The provision in each and all of the agreements was as follows:—

‘The syndicate, whenever required, shall from the electricity or pneumatic power generated under this agreement, supply the same in Canada to the extent of any quantity not less than one-half the quantity generated, at prices not to exceed the prices charged to cities, towns and consumers in the United States, at similar distances from the Falls of Niagara, for equal amounts of power and for similar uses, and shall, whenever required by the Lieutenant Governor in Council, make a return of prices charged for such electricity or power, verified under oath by any

7-8 EDWARD VII., A. 1908

chief officer of the syndicate, and if any question in dispute arises, involving the non-supply or prices of electricity or power for consumption in Canada, the High Court of Justice of Ontario shall have jurisdiction to hear and determine the same and enforce the facilities to be given or the prices to be charged.'

The price, it will be seen, was to be fixed at the place of delivery, which, of course, implied that the companies were to build transmission lines and deliver. These corporations did what was to be expected, with so little control over their operations. By dividing the territory to be supplied, they avoided competition with each other, and two of them, by the formation of allied companies in New York state to distribute the power there, sought to nullify the effect of the only provision designed to protect the Canadian consumer.

The Canadian Niagara Power Company arranged to deliver its power to an allied company, the Niagara Falls Power Company, which built a transmission line to Buffalo and distributes the power of both companies. This company has taken to itself the market of Niagara Falls, in New York State, and Buffalo.

The Ontario Power Company formed a subsidiary company in New York state, known as the Niagara Lockport and Ontario Company, and the latter company has built transmission lines in that state 200 miles in length with branches, at a cost of upwards of four million dollars. This corporation supplies Rochester, Syracuse, Utica and manufacturing towns along and within reach of their transmission lines, all in New York state. It actually entered into a contract (subject to its agreement with the Power Company) to supply all of its 180,000 horse-power to its subsidiary company and has not, until recently, made any serious effort to supply the Ontario market.

The Electrical Development Company has built a transmission line to Toronto, but it also seeks an outlet in New York state for its surplus power.

The plain meaning of the agreements with each company was that it was to be permitted to transmit part of its power to New York state, but was to reserve half of its supply for use in Canada, and was to deliver the same at prices similar to those charged in New York state. By transmitting in New York state, only through the medium of their allied companies, they made it impossible to require them to deliver in Ontario, at equal distances, at equal prices. As they delivered to their allied companies at Niagara falls, they were in a position to say to the Canadian consumer: 'If you require power, you must build your own transmission lines and come to Niagara falls for it.'

The situation is full of difficulties. The companies have spent over twenty million dollars on their works and must find markets. It was evidently the original intention of both the Ontario Power Company and the Canadian Niagara Company to practically ignore the Canadian market. Unless some action could be taken which would control the export, it seemed to the members of your Commission inevitable that all three companies would seek the more accessible and profitable market in New York state to the neglect of our own, and we urged in our former report that your government should protect the Canadian public by exercising your right to control and regulate the export of electrical energy.

By chapter 16, 6-7 Edward VII., statutes of Canada, and known as 'The Electricity and Fluid Exportation Act,' such control was taken. Sections 4 and 5 provide as follows:—

'4. Subject to any regulations of the Governor in Council in that behalf the Governor in Council may grant licenses upon such conditions as he thinks proper for the exportation of power or fluid where a right to export exists by lawful authority; and such license shall be revocable upon such notice to the licensee as the Governor in Council deems reasonable in each case.

'5. Any such license may provide that the quantity of power or fluid to be exported shall be limited to the surplus, after the licensee has supplied for distribution to customers for use in Canada power or fluid to the extent defined by such

## SESSIONAL PAPER No. 19b

license, at prices and in accordance with conditions, rules and regulations prescribed by the Governor in Council.

'2. Every such license shall be revocable at will, by the Governor in Council if the licensee refuses or neglects to comply with any of the conditions imposed with regard to the supply and distribution of power or fluid in Canada.'

It did seem to us that it was a fair solution of the problem to say to each of the companies, 'You must carry out the terms of your agreement in its spirit by taking care of the Canadian market at reasonable distances from Niagara falls and at reasonable prices, at all times, to the extent of at least one-half of the power generated. If you carry out your obligation in that regard, you will be allowed to export your surplus, but not otherwise.'

The control over one-half of the production would undoubtedly supply all the demands of our Canadian market for many years to come, and it would not be any great hardship upon the companies to compel them to jointly or severally build the necessary transmission lines to care for the same. While we think it should be a condition of the charters of all companies hereafter incorporated in Canada that the power generated should be distributed wholly in this country, that principle cannot with fairness be applied to these corporations at Niagara falls.

It is manifest that when they were permitted to develop 400,000 horse-power, a market must be found for much the greater portion, for the present at least, in New York state.

If the companies had themselves delivered power in New York state, the prices there at equal distance in equal quantities was to be the test as to what price was to be charged the Canadian consumer. As they have made that test impossible by delivering all their power at Niagara falls, the price which they should be allowed to charge in Canada must be fixed in some other way. It was undoubtedly intended to be limited. The public have no right to expect power cheaper than it can be delivered after allowing an adequate return to the companies upon their investment. The rate to be charged, therefore, should be under some form of government control and regulation.

The companies should be treated alike. Each of them entered into the same obligation with regard to our market, and each should be compelled to carry out the terms of its agreement. If that be done, the regulation of the exports will be simple, the surplus only be exported by each, after each had done its share towards satisfying this Canadian demand. Under this plan the public will receive just what it is entitled to, the supply of power at reasonable prices, and no injustice will be done to any of the companies. It would be monstrous if all but 40,000 or 50,000 horse-power of the total 400,000 development should find a market in New York state. The public in Western Ontario are thoroughly aroused against this threatened injustice.

Under the provisions of 'The Electrical Exportation Act,' the companies of Niagara falls are compelled to take out temporary licenses under regulations, a copy of which is appended and marked 'D,' and so control is kept over their export, and they have notice that they must recognize their obligations to our market.

The Ontario Power Company is now extending its lines to St. Catharines, and, it is understood, both it and the Canadian Niagara are now offering power to the Hydro Commission.

The Legislature of Ontario at its last session passed 'An Act to Provide for the Transmission of Electrical Power to Municipalities.' Statutes of Ontario, 1907, page 169. Section 8 provides as follows: —

'The Lieutenant Governor in Council, upon the report of the Commission recommending the same, may authorize the Commission:

'(a) To acquire by purchase, lease or otherwise, or without the consent of the owners thereof or persons interested therein to enter upon, take and use the lands, waters, water privileges, water-powers, works, machinery and plant of any corpora-

7-8 EDWARD VII., A. 1908

tion or persons owning, holding under lease or otherwise or developing, operating or using the same for generating or adapted for generating electrical power or energy or for the transmission thereof in Ontario; and to develop and use the same for any of the purposes of this Act

'(b) To construct, maintain and operate and to acquire by purchase, lease or otherwise, or without the consent of the owners thereof or persons interested therein to enter upon, take and use, all erections, machinery, plant, and other works and appliances for the transmission and supply of electrical power and energy, and to conduct, store, transmit and supply electrical power or energy for the purposes of this Act and with lines of wires, poles, conduits, motors or other conductors or devices to receive, conduct, convey, transmit, distribute, supply or furnish such electrical power or energy to or from any corporation or person at any place through, over, under, along or across any lands, public highway, bridge, viaduct, railway, waters or watercourse, and through, over or under the lands of any corporation or person, and to enter upon any lands upon either sides of such lines or conduits and fell or remove any tree or limb thereof, or obstruction, which in the opinion of the commission, it is necessary to fell or remove.

'(c) To contract with any corporation or person generating, transmitting, or distributing electrical power or energy or proposing so to do, to supply electrical power or energy to the commission; and to require any corporation or person generating, transmitting or distributing electrical power or energy to supply so much thereof as the commission may require.'

It is proposed, under the provisions of this Act, that the commission shall build or acquire transmission lines from Niagara falls for the purpose of supplying power to the various municipalities, capable of being served from that point, and various municipalities interested have, by their votes recently taken, signified their desire to enter into agreements with the commission to that end.

It will be unfortunate if, with the same object in view, the protection of the public interest, the policies adopted at Ottawa and Toronto should work apart. It is not for our Commission to say whether private ownership with government control or municipal ownership should prevail with regard to the distribution of power from Niagara falls. We say that it is the duty of the companies to distribute at reasonable distances and at reasonable prices, and that they should be compelled to do so in equal proportions, so that the control over the export of each may be maintained by our government. If, however, the municipalities of Western Ontario elect to assume the burden of distributing, in the hope of thereby securing cheaper power, it does seem to us to be a most desirable essential in the working out of that plan that they should take over all the distribution and should acquire their power at Niagara falls, not from one company, but proportionately from each, so that the control over the export of each can be maintained.

It is manifest that if the Hydro Commission take all their power from one company, the Ontario Power Company, as proposed, they will come into active competition with the Electrical Development Company, the only company which has made a real attempt to supply our market, and they will, at the same time, relieve the other two companies from any obligation towards that market. By assuming the responsibility of the distribution, they practically do away with the provision in the agreement by which the companies are required themselves to distribute in Canada.

Duplicate lines would be wasteful and undesirable. If the Hydro Commission distribute, therefore, the companies cannot be expected to do so in competition. It follows also that if the Hydro Commission take all their power at Niagara falls from one company, the others must be permitted to export all, or nearly all, and the inevitable result must be to make your Act with regard to the exportation of power unworkable.

If a policy be adopted which enforces the obligation, at all times, of each of the companies to our market, each of the companies will make their American contracts subject to conditions which will enable them to supply, from time to time, the

## SESSIONAL PAPER No. 19b

increasing Canadian demand. If, however, any of them are excused from its present obligation to our market, it will be much more difficult later on to enforce its obligation to it. Contracts will have been made in New York state, and vested interests created which will complicate the situation.

Your Commission respectfully submit that each of the companies should be compelled to supply the Canadian demand proportionately, and only be allowed to export its surplus. Their obligation is to distribute power at reasonable distances and at reasonable prices. If they are relieved of the obligation to so distribute, they should not be relieved of the obligation to proportionately supply the power at Niagara falls and at fair prices.

If the principle of proportionate supply to the Canadian market be maintained, your government could control the export, and so insure at all times an ample supply for our use. This policy would be quite consistent with the terms of the agreements, not to do injustice to any of the companies, and yet fully conserve the public interest.

If we should ever require more than 200,000 horse-power (half of the production, we can safely leave, until then, the adjustment of that difficulty. In the meantime an additional supply may be made available by the use of the water below the falls.

All of which is respectfully submitted.

GEO. C. GIBBONS,  
*Chairman, Canadian Section.*

LOUIS COSTE.  
*Member, Canadian Section.*

WM. J. STEWART,  
*Member, Canadian Section.*

## APPENDIX A.

## EXTRACT FROM A REPORT OF THE COMMITTEE OF THE PRIVY COUNCIL, APPROVED BY THE GOVERNOR GENERAL ON MAY 9, 1907.

On a memorandum, dated May 7, 1907, from the Acting Minister of Public Works, submitting that the Grand Falls Power Company (Limited) was chartered by an Act of the Provincial Government of New Brunswick (5 Edward VII., in 1905), the company subsequently applying to the Governor General in Council on January 5, 1906, for permission to construct hydraulic works on the River St. John.

To this application, however, strong protests were opposed:

Firstly: By the Madawaska Log Driving Company and the St. John River Log Driving Company, largely interested in the navigation of that stream at that special point and largely controlling the log driving operations on the river. The objections of the said log driving companies are given in detail more particularly in paragraph 3 of Mr. Resident Engineer Shewen's report and in the different documents attached hereto, and from which copies it will also be seen that an agreement was finally arrived at between the said log driving corporations and the Grand Falls Power Company.

The Canadian Pacific Railway Company also objected to the granting of the permission sought for by the applicants, for the reason that the raising of the water near their bridge at that place will render the repairs to that structure very difficult and much more expensive.

Lastly: The Grand Falls Water Power and Boom Company, incorporated by Chapter 77 of the Acts of the Dominion of Canada, passed on the 22nd of July, 1895, claim that they have acquired lands, mill privileges, water-power, right of flowage, &c., and that the construction of the works proposed by the Grand Falls Power Company (Limited) will practically destroy their privileges.

The River St. John being a boundary stream, works affecting its navigation are of international importance, and for that reason would come more properly under the jurisdiction of the International Deep Waterways Commission.

The Minister, therefore, recommends that authority be given to refer the application of the Grand Falls Power Company (Limited) and of the protests lodged against such application, to the International Deep Waterways Commission for their examination and report.

The Committee submit the same for approval.

F. K. BENNETTS,  
*Assistant Clerk of the Privy Council.*

The Honourable the Minister of Public Works.

## APPENDIX B.

A Bill to authorize the construction of Dams, Canals, Power Stations and Locks for the Improvement of Navigation and Development of Water Power on the St. Lawrence river at or near Long Sault island, St. Lawrence county, New York.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that Michael H. Flaherty, Fred. J. Hyde, Henry H. Warren, Walter F. Wilson and John C. Crapser, their successors and assigns, may hereafter erect, construct, maintain, operate and use a dam or dams, canal or canals, reservoir or reservoirs, gates, sluices, trunks, pipes, bulkheads, piers, flumes, abutments and other works appurtenant thereto, and a bridge upon or in connection with said works, in or across the St. Lawrence river, in the State of New York, or so much thereof as lies within the jurisdiction of the United States, and in and across the lands adjacent to said river, at such point or points upon or adjacent to the south shore of said river, near Long Sault island, or Barnhart island, and upon the said islands, and between said islands or either of them and the shores of said river and Sheek island (but not across the international boundary line unless consented to by the Dominion of Canada), as the said Michael H. Flaherty, Fred. J. Hyde, Henry H. Warren, Walter F. Wilson and John C. Crapser, their successors and assigns, may elect and the Secretary of War may approve, and also in and upon so much of the said river and the bed thereof as lies south of the international boundary line, independently or in connection with like works now erected or to be erected in so much of said river and the bed thereof as lies to the north or Canadian side of said international boundary line, and upon and adjacent to the northerly shore of said river, and said Michael H. Flaherty, Fred. J. Hyde, Henry H. Warren, Walter F. Wilson and John C. Crapser, their successors and assigns, may erect, construct, maintain, operate and use power stations on or in connection with the said works, with all suitable structures, machinery and other accessories for the development of water power and the generation, use and transmission therefrom of the electric energy and power to be derived from said St. Lawrence river, subject to all and singular the conditions and provisions of an Act entitled 'An Act to regulate the construction of dams across navigable waters,' approved June 21, 1906, excepting that the actual construction of the works herein authorized shall be commenced within one year and completed within ten years from the date of approval hereof;

Provided, That the said above-named persons, their successors or assigns, shall, coincidently with the construction of the said works, build at locations approved by the Secretary of War a lock or locks with its or their appurtenances, said lock or locks to be of such kind and size and to have such appurtenances and equipment as shall conveniently and safely accommodate all the present and prospective commerce of the St. Lawrence river;

Provided further, That the said works and their appurtenances shall be so designed, located, constructed, maintained, operated and used, and the said lock or locks, with its or their appurtenances, shall be so designed, located constructed, equipped and maintained as to permit at all times during the season of navigation and at any stage of water the safe and convenient navigation of steamboats and other vessels and of rafts and barges through all that portion of the St. Lawrence river affected by said works;

Provided further, That detailed plans for the construction and operation of the said lock or locks shall be submitted to and approved by the Secretary of War before the commencement of construction of any portion thereof, and the said lock or locks shall be constructed under the supervision of some engineer officer of the army designated for that purpose, and that after the approval of the plans therefor no deviation therefrom shall be made without the prior approval of the Secretary of War of any such deviation;

Provided further, That compensation shall be made by the said above-named persons, their successors or assigns to all persons, firms or corporations whose lands or other property may be taken, overflowed or otherwise damaged by the construction, maintenance or operation of the said works, in accordance with the laws of the State of New York, but the United States shall not be held to have incurred any liability for such damages by the passage of this Act;

Provided further, That when said dam or dams and lock or locks and appurtenant works shall have been completed to the satisfaction of the Secretary of War, the said above-named persons, their successors or assigns, as the case may be, shall<sup>\*\*</sup> convey to the United States, free of cost, title to all such lands as may be required for the construction and operation of said lock or locks or approaches thereto, and shall grant to the United States free use of all such water power as may be necessary for operating such lock or locks;

Provided further, That the United States shall at all times have the right to control the use of the said dam or dams and the level of the pool or pools formed thereby to such an extent as may be necessary to provide proper facilities for navigation.

Section 2. That the withdrawal of water from the St. Lawrence river and the discharge of water into the said river for the purpose of operating the said power stations and appurtenant works shall at no time be such as to impede or interfere with the safe and convenient navigation of the said river by means of steamboats or other vessels or by rafts or barges;

Provided, That said above-named persons their successors or assigns, shall construct such suitable fishways as may be required from time to time by the Secretary of Commerce and Labour.

Section 3. That except as provided for below in this section, said above-named persons, their successors or assigns, shall bear the entire cost of locating, erecting, constructing, maintaining and operating the structures and appurtenances provided for in this Act.

Provided, That the United States shall bear the cost of the supervision of the work by an engineer officer of the army, as provided for in section 1 of this Act, and also the cost of maintaining and operating the lock or locks, with their appurtenances, after their completion and due acceptance by the Secretary of War;

Provided further, That the said above-named persons, their successors or assigns, shall provide, in connection with such lock or locks and appurtenances, sufficient and suitable power for operating the same, as provided in section 1 of this Act, according to plans and specifications submitted to and approved by the Secretary of War.

Section 4. \*\* That the right to alter, amend or repeal this Act is hereby expressly reserved.

NOTE.—The Chief of Engineers, United States army, under date of February 23, 1907, recommended to the Rivers and Harbours Committee that section 1 be amended at the point marked\* by inserting the following :—

\* 'turn the said lock or locks over to the United States ready for use and free of all expense, and said structures shall be and remain the sole and exclusive property of the United States, and the said persons, their successors or assigns, shall also'—

Also that section 4 be numbered 5, and a new section 4 be inserted as follows:—

\*\* 'Section 4. That the consent of the proper authorities of the Dominion of Canada shall be obtained before the work herein authorized is commenced.'

**APPENDIX C.****INTERNATIONAL WATERWAYS COMMISSION  
MEETING OF CANADIAN SECTION  
PROCEEDINGS OF PUBLIC HEARING.****ST. LAWRENCE POWER COMPANY AND LONG SAULT DEVELOPMENT COMPANY.**

MONTREAL, WEDNESDAY, Nov. 6, 1907.

The Canadian Section of the Commission met in the Council Chamber of the Board of Trade at 10 a.m.

PRESENT—George C. Gibbons, Esq., K.C., Chairman; Mr. Coste, Mr. Stewart, Secretary Côté.

Deputations were present from the Shipping Federation of Canada, the Montreal Board of Trade, the Town of Cornwall, and representatives of the St. Lawrence Power Company and the Long Sault Development Company.

The CHAIRMAN.—Gentlemen, the International Waterways Commission, the Canadian Section of which is here to-day, have had an application for a very important undertaking in the St. Lawrence river—the development of power by two companies, the United States company being known as the Long Sault Development Company, and the Canadian Company as the St. Lawrence Power Company—near Cornwall, Barnhart island and the Long Sault rapids. The general Commission on International Waterways have agreed upon certain principles governing these boundary waters. They have agreed that, in places such as the St. Lawrence river, Sault Ste. Marie and other boundary waters, where there is a stream partly in the territory of each country, if it be at all possible to make use of the water power without injury to the interests of navigation, that it should be permitted in such a way as to have the benefit distributed equally between the two countries as far as possible. The interests of navigation are to be in all cases paramount, and subject only to the right of use of the water for domestic purposes. That is to say, that where water is taken at Sault Ste. Marie, one-half of the power of the surplus water that can be taken without interfering with navigation should be reserved for the use of the Canadian people. That principle has been adopted by the general Commission. Now, this application comes before the International Waterways Commission, being an international matter, and has to be dealt with by both governments. Of course, it is the desire of the Commission, and in the public interest, that where power can be developed without injury to paramount rights of navigation it should be permitted; but if there be interference with those rights, of course it cannot be allowed. We had these gentlemen representing the Power Companies before us in Toronto, and it was thought desirable by the Canadian section, that the Montreal Board of Trade, so heavily interested in the navigation of the St. Lawrence, and other interests which might be affected, should have an opportunity of hearing from those, who are interested in this scheme, just what they propose, and that we should have the benefit of their opinion with regard to it, either now or later on. It is a large matter, not one in which I think it is desirable to act too hastily. The Commission want to get the very best assistance they can, expert or otherwise, and then to decide in advising the respective governments regarding this under-

7-8 EDWARD VII., A. 1908

taking in accordance with the principles which the commission has already adopted. I think perhaps it would be best now that we should call upon Mr. Foster to explain just what is proposed to be done by this company, and then we will hear in turn any other interests that are represented.

Mr. GEO. C. FOSTER.—As president of the St. Lawrence Power Company, I do not think it is necessary for me to say anything to you other than to furnish you with the explanations that our engineer will give in regard to what we propose to do. Suffice it to say that if our works as now contemplated are carried out, it will mean so far as Canada is concerned, the investment of a large sum of money and the development for commercial purposes of something that is to-day useless so far as those rapids at Cornwall are concerned. We do not expect from this Commission, or from anybody else, any unfair criticism; and we are quite prepared to put before you every detail and plan that we propose to adopt, because we are instructed by our engineer that not one dollar's worth of work that we anticipate doing is going to interfere with the paramount question of the navigation of the St. Lawrence either above or below Montreal. I am aware that during the last few days it has been stated here that the works which we contemplated at Cornwall are going to seriously interfere with the navigation of the St. Lawrence below Montreal; and I am going to admit to you frankly on the start, those of you who are shippers and interested in this question, that so far as our plans are concerned they not only do not contemplate such a thing, but that if it can be shown that they do, we do not expect anything but opposition from the Montreal Board of Trade and from the shippers who are interested in that route. And it is because I feel so confident that the position which our engineers have disclosed to us, is the true one, as well as the result that will follow from these works, that I tell you frankly we are prepared to put before you everything connected with it now and for the future. And if in the future the Board of Trade of Montreal or the shipping interests of Montreal have reason, or think they have reason, to fear seriously the result of the work we are doing at Cornwall, we shall at all times be prepared to put before you every detail connected with that work. I would ask our engineer to put the matter before you in a technical way.

J. W. RICKY. Gentlemen, the general scheme as proposed by the St. Lawrence Power Company for the development of power at the Long Sault rapids is, briefly, the construction of two dams—one across the main channel of the St. Lawrence river and the other across the secondary channel of the St. Lawrence river. Through the main channel of the St. Lawrence, approximately, 96 per cent of the water passes, through the secondary channel, which is an international one, the other 4 per cent passes. The construction of these dams will throw approximately 50 per cent of the water into that international channel where now only 4 per cent goes. The scheme calls for the co-operation of both governments. Without such co-operation no power can be developed in the main channel of the St. Lawrence river, other than such power as is now developed by the St. Lawrence Power Company near the town of Milles Roches. The Long Sault Development Company, a United States corporation, has a charter from New York state under which it may construct a power plant in South channel of the river, by which channel I mean the channel south of Long Sault island. This plant will be entirely in American waters, and would not interfere in any way with Canadian interests, any more than the present St. Lawrence Power Co.'s plant interferes with United States interests. (A map of the section was placed on the wall, and the various points referred to were indicated.) Ninety-six per cent of the water goes down through the South Sault, in United States territory, and the main channel north of Long Sault island. The 96 per cent then, having passed the international boundary line, passes entirely into United States territory on the south side of Barnhart island. The other 4 per cent passes through what is called Little river, which is the channel between Barnhart island and Sheek island until it gets to the east end of Sheek island. Then it joins the other 96 per cent.

## SESSIONAL PAPER No. 19b

The proposition of the St. Lawrence Power Company is to have a power house near the east end of Barnhart island in the present secondary channel of the river, that is, the Little river channel. This north end will abut against the Canadian shore, then extending westerly will join the V-shaped dam running westerly, and the other end of the dam will run southeasterly to the international boundary line. That much of the power house and dam is entirely in Canadian territory. The scheme further proposes to construct a new lock, about half a mile above present lock 20. This map was made to show that without the co-operation of United States interests no power could be developed from the Long Sault rapids, except the power that is available from the South channel. Let us assume this power-house and dam constructed as far as the international boundary line. All the water that is now going through the Long Sault rapids will continue passing down the present channel on the south of Barnhart island. The same amount of water which now goes through the Little River channel will continue there. That water, approximately 10,500 cubic feet per second, will come down as far as this V-shaped dam on the easterly end of Barnhart island, and would then pass through the gap between the boundary line and Barnhart island. That gap would be about 300 feet wide. That being the case, we have created no elevated pond. We have only the same amount of water that has been there in the past, and no power could be developed from this plant at all. I will now put up the other map, which shows the combined scheme. (Large second map is placed on wall.) This map is a tracing of the greater part of the former map, except that the proposed improvements on the south side of the international boundary line are here shown. All that is north of the international boundary line is just the same as it was on the other map. You will note a dam is proposed by the Long Sault Development Company extending from the north end of Barnhart island over to Long Sault island. Further, at the V-shaped dam at the easterly end of Barnhart island there is a second dam about 500 feet long running from the international boundary line and abutting on or against Barnhart island. Likewise, in South channel is shown the proposed power house of the Long Sault Development Company and the United States lock. This is the power house to which I referred when I stated that the Long Sault Development Company had a charter from the State of New York authorizing the construction of this dam under certain limitations. Now, let us assume that this power house and lock are constructed; that this upper dam is constructed; likewise the V-shaped dam, or the lower dam, is constructed; what will then be the result?—The water of the river above the Long Sault Development Company's power house and above these dams will then rise until it attains such a depth on the crest of the dams that all the water will pass over them, the power houses being assumed not in operation. That will mean the depth of the water on the crest of the dam will be approximately 5 feet, and we propose, subject to the permission of you gentlemen, to raise the level of the future pond five feet above the present level in the Cornwall canal on the north side of Sheek island. I referred a short time ago to the lock in Canadian territory at the east end of Sheek island, and about half a mile, roughly above lock 20. This lock, it is proposed to build entirely at the expense of the St. Lawrence Power Co., subject to approval, and if you please, the design of the Department of Railways and Canals. We propose, subject to your approval, to construct a channel along the lines or course of the present Little river, this channel to be approximately 800 feet wide. The velocity of the water in that channel will be about 3 feet per second, so that a boat having passed from Cornwall up the present Cornwall canal and through lock 20, thence going half a mile westerly, will pass through the new lock to be constructed at the St. Lawrence Power Company's expense. Then it can pass in almost a straight line, under full headway, up the river. The boats passing through the present channel, after clearing lock 20, follow the route that I will indicate with the pointer, through this tortuous channel, past the swing bridge, into the circuitous channel on the north side of Sheek island, then at the westerly end of Sheek island enter a narrow channel, and navigate it for a distance, approximating four miles, that is the upper end of the Cornwall canal, and through lock 21. I think it

7-8 EDWARD VII., A. 1908

will be plainly evident to all interested, that this channel between Barnhart and Sheek islands—this channel being anywhere from 30 to 40 feet deep and 800 feet wide—will offer a most excellent channel for navigation, where boats can come down under full headway to within a reasonable distance of the lock, when of course they have to slow down, as compared to the narrow channel on the north side of Sheik island and the Cornwall canal above and westerly from Sheik island. Now, coming to the United States side of the question, the United States government will insist on the construction of a lock joining the power house of the Long Sault Development Company at the foot of Long Sault island. This will be a single lift-lock, making the entire rise that is now accomplished by six locks in the Cornwall canal in a single lift. I have had some observations made on the time of passage required for boats through the present Cornwall canal. Just taking the boats at random, I put a man down there and told him to take every boat he could get on. I found that the shortest time was three hours and fifteen minutes and the longest was six hours and forty-five minutes. The time in passing through the lock was about 15 to 17 minutes roughly, which could be reduced a little below that.

There being six locks, 6 times 15 are 90 minutes, or an hour and a half, that is required for the passage of those boats simply through the canal. Having passed through the locks, as I understand the Canadian law, the legal limit is 4 miles per hour for the passage of boats in the canal. As a matter of fact, I think the shipping interests go considerably faster than that, but the legal limit is that. The main time spent is in passing through the lock slowly and leaving it slowly. The time after leaving the sluice gates is comparatively short; so that the United States lock should not require more than 20 or 25 minutes or half an hour. That means a saving of one hour on the downward trip, due to the United States lock. Having passed the United States lock, boats then enter the main channel of the St. Lawrence river, where the water, according to the United States government charts, is anywhere from 40 to 60 feet deep. This channel at its narrowest point will be over 1,000 feet wide, so that boats can pass each other at full speed. Now, the question may arise here, the current on the south side of Barnhart island is now very swift. No ordinary craft would care to come up against that. It is as swift as it is up near Farrans point. When we construct the upper dam that crosses the main channel of the river from Barnhart to Long Sault island, and also the V-shaped dam at the east end of Barnhart island, we will pass more than half the water in the river over the dam at the east end of Barnhart island. As a consequence of this, the water, instead of following the present main channel of the St. Lawrence river south of Barnhart island, about half of that water will be deflected—in fact a little more than half will be deflected—into the present channel of Little river, which it is proposed to enlarge and rectify, and also into the channel on the north of Sheik island. I will take up in just a moment how the water would get there under our proposed scheme. If we diminish the amount of water in this south channel that is entirely in United States territory by 50 per cent, we will decrease the velocity approximately 50 per cent. I have had current meter measurements made in this channel, and it is estimated that the velocity will be approximately 4 to  $4\frac{1}{2}$  miles per hour, which is considerably less than is obtained in many other stretches of the river. So that boats leaving Cornwall will have no difficulty in coming up the river through this channel and through the United States lock. However, I wish you to bear in mind that the integrity of the present Cornwall canal system is to be maintained. The boats, having such access, can pass up the Cornwall canal through the present lock 20, through the new lock which takes the place of lock 21; then if the captain should choose, he can go on the north side of Sheik island in the present Cornwall canal, or through the 800 foot international channel. It is proposed, with your permission, to remove the dam between the easterly end of Sheik island and the main shore that maintains the water in the present Cornwall canal at a higher elevation than the water in the main channel of the river immediately south of it. It is likewise proposed to remove the dam at the westerly end of Sheik island. The object in this is two-fold—in order to get 50 per cent of the total amount of the water in the

## SESSIONAL PAPER No. 19b

river down to the lower end of Barnhart island it is necessary to have very deep and very wide channels. Here is a channel that is already excavated, and by availing ourselves of that channel, by the removal of those two dams, the velocity of the water in what you might call the proposed Little river section will be exceedingly slow, so that boats will not have the slightest difficulty in coming against the current of about two miles per hour—three feet per second is what the figures call for.

Mr. Foster referred to the statement that seems to have gained ground to a greater or less extent, that the operations which we are proposing would diminish the volume of water in the St. Lawrence river at Montreal. Let us assume these dams built—the upper dam between Long Sault and Barnhart islands, and the lower dam as described previously. There is no pond or lake in which to store the water that is coming down the river. We have to pass it over those dams just exactly as it comes. If there were adverse winds that retard the water, then not so much water passes over the dams. If there are favourable winds coming down stream, then more water will pass over the dams. It seems almost axiomatic that simple obstructions placed across the river, as indicated here, with no storage pond to speak of, above the dams, that there can be no reservoir effect above there; consequently the normal flow of the river will obtain under the conditions proposed just the same as they do now. This fact seems so evident that I will not take up the time of you gentlemen to discuss it further, although if anyone wishes I would be very glad to enlarge on it.

There is one more consideration—the subject of frazile ice in the river. Generally speaking, the ice which forms the jams and ice bridges in the main river opposite Cornwall are caused by the Long Sault rapids. The water comes down at a temperature slightly below 32 degrees, due to the excessively cold weather. In passing over the rapids, the agitation that is there set up causes an immediate formation of those crystals of frazile ice. It is a long, narrow crystal—it is just like slush, like snow that is put in the water. This frazile ice, passing down the main channel, reaches Lake St. Francis. The velocity there is very much slower, and the ice lodges there. Then more, coming down, it just packs right in solid. We have observations showing that the rise of water in the river a short distance above Cornwall bridge in 1883, if I mistake not the date, I have a record of it in my book, rose practically 30 feet. In 1892, it rose 27 feet. I am informed by citizens of Cornwall that the winter floods caused by ice have reached up as far as Fifth street. It is also a well known fact that in the present plant of the St. Lawrence Power Company there is practically no trouble from frazile ice. The reason for that is, that this channel on the north side of Sheek island freezes over. The minute it freezes over, the ice floe protects the water from further reduction in temperature, and the velocity of the water being reduced the formation of frazile ice is prevented. Now, bearing these principles in mind—and it is no theory of mine, but it was very elaborately set forth by Dr. Barnes, of McGill University, who has written a very learned monograph on the subject, and any of you gentlemen who are interested in the subject of ice will find no better statement of the conditions than are set forth in that book—the construction of those dams will create a pond above the dams, so that the velocity of the water will be very materially reduced, due to the raising of the present surface of the water, the river channel being the same width. Consequently, the velocity being reduced, we will not have the turbulent water which now passes down the Long Sault, and the formation of frazile ice will thereby be prevented to a very great extent. It will not be entirely prevented, but to a very great extent. The same principle obtains in connection with the power house of the Long Sault Development Company, so that the great ice-making machine that is there now will be obliterated—and it means much to Cornwall interests.

It is proposed, subject to your approval, to remove the present dyke on the south side of the present Cornwall canal, west of Sheik island, the object being to get additional waterway on the north side of Long Sault island, which is now the main channel of the river, so as to reduce the velocity of the river in that channel as much as possible.

Coming now to the new lock which it is proposed to build above half a mile above lock 20. Northerly from this lock would be constructed a dyke approximately 100 feet wide on top. The function of this dyke will be to enable us to abandon this short circuitous length of canal between the enlarged Cornwall canal section and the present canal just above lock 20. The dykes of the present Cornwall canal are approximately 16 to 17 feet wide on top, and down here opposite Fletcher's hotel they restrain a head of roughly 30 feet. I have examined these dykes many times, and they are practically bottle-tight, with a head of 30 feet against them. We are proposing here to have a head of but five feet against that dyke, and a crest width of about 100 feet removing without any peradventure the possibility of a break occurring through them. In order to absolutely protect the interests in the Cornwall canal below lock 20, regulating works could be installed there to discharge the water from the canal down into the main channel of the river. Likewise provision can be made through the dyke, as indicated here, whereby the present amount of water that is supplied the water power interests at Cornwall could still be maintained. Or, if the government saw fit and chose to, more water could be supplied to those interests than is now the case.

Mr. MACAULEY.—May I ask one question. Will you please let us understand what is proposed at the foot of Barnhart island? You are proposing, apparently, to excavate two new channels, and what looks like a dam at the foot of that, which would mean a complete damming of the waters of the river. I see a new dam at the foot of that channel?

Mr. RICKEY.—That is the power house there.

Mr. MACAULEY.—Including a dam?

Mr. RICKEY.—The power house itself acts as a dam.

Mr. MACAULEY.—So that the result is three dams—the upper one, the one between locks 20 and 21 and this one at the end of that new channel; together with the other one at the end of South channel, which really completely bar the river?

Mr. RICKEY.—Absolutely. If we did not bar the river we could not develop any power. That is true.

Mr. MACAULEY.—One result of that will be no longer any such transit as is now made by the boats of the Richelieu & Ontario Navigation Company?

Mr. RICKEY.—No, sir, they cannot go down the rapids.

Mr. FOSTER.—There will be no rapids.

Mr. RICKEY.—I lived some years at Sault Ste. Marie, both Michigan and Ontario, and was struck with the large number of visitors that stopped there every summer just to see the passage of boats through the locks. They could visit the United States and then go to the Canadian side. Now, one of the chief features of the pleasure tours that are offered by the R. and O. Navigation Co. is the passage of the rapids in the river. Including the Long Sault rapids, there are four sets of rapids between the upper end of Barnhart island and Montreal. Our work here proposes absolutely obliterating the Long Sault rapids. On the contrary, the people coming on that pleasure trip will pass down through a lock that has a higher single lift than any lock that I know of on the American continent.

Mr. C. J. SMITH.—Will it be opened Sundays?

Mr. RICKEY.—Yes, sir, it will be open Sundays.

Mr. SMITH.—That is, the United States.

Mr. RICKEY.—The United States lock wil open on Sundays. Moreover, they will see a dam that will be second to none in the world—and I believe I am perfectly correct in that statement—there will be a depth of from two to five feet on the crest of the dam, falling 40 feet. That will be a sight that will be worth travelling many miles to see. Take the case of Niagara falls. The fear was entertained that the

## SESSIONAL PAPER No. 19b

so-called power enterprises there would interfere with the scenic beauty of the falls and diminish the amount of tourist travel there. On the contrary it has gradually increased, and the citizens of Niagara Falls, who were financially interested there before, are making more money now, I believe almost without exception, than they did formerly.

Mr. KING (Secretary Dominion Marine Association).—The point is new to me. I do not know whether it has occurred to my friend Mr. Smith, who is so interested in the R. & O. Co.? What provision is made for rafts?

Mr. RICKEY.—Rafts will go through this lock on the United States side.

Mr. KING.—What will be the size of the lock?

Mr. RICKEY.—That has not been determined, but it will be compatible with the entire Canadian system of locks.

Mr. KING.—But they do not now go through the locks.

Mr. RICKEY. I understand they do not, but that lock will be made wide enough to take care of the present traffic of the river, and any reasonable anticipation. The United States government will insist upon that.

Mr. KING.—Any reasonable raft.

Mr. RICKEY.—Any reasonable raft. You cannot make those rafts of exceedingly great width, because in passing through the various rapids they would be broken up. Now, the way the rafts come down the river at present is for a tug to bring them down to the upper end of Long Sault island. There they are broken up. The rafts are cast loose from the tug, and go down, trusting principally in providence. After arriving in the main channel of the river at the west end of Barnhart island they are again made up. Coming down in the proposed channel they would enter the lock on the United States side without being cut loose from the tug, and then on down the river. Now, we have had observations made as to the number of rafts and craft that have passed down the river in 1905 and 1906. From June 20, 1905, to October 20, 1905, there were seven trips of tugs accompanied by rafts; there were 21 pleasure boats. For the year 1906, from April 22 to November 23 inclusive, there were tugs accompanied by rafts, 17; tugs alone, 5; tug and scow, including one tug accompanied by a dredge 4; pleasure boats, 21.

Mr. KING.—You mean 21 separate boats or all of one name?

Mr. RICKEY.—No, there were 21 separate boats went down there.

Mr. KING.—In the season?

Mr. RICKEY.—Yes, this is South channel I am talking about. In the main channel, as I understand it, R. & O. Navigation Company steamers ply for about three months.

Mr. SMITH.—They ply longer than that; they ply the Long Sault rapids the season of navigation, whatever that may be, whatever we choose to make it. The Long Sault is a navigable stream, and not only Long Sault boats—

Mr. RICKEY.—Is it not a fact that the R. & O. boats are the only boats that go down?

Mr. SMITH.—Oh, no.

Mr. RICKEY.—How long is a season for the R. & O. boats to go down there?

Mr. SMITH.—We can run the Long Sault rapids the entire season of navigation.

Mr. RICKEY.—What is the number of months?

Mr. SMITH.—Roughly speaking, seven months. I do not say they always do. There is no trouble to run the Long Sault rapids at all.

The CHAIRMAN.—What amount of horse-power do you propose to develop on the Canadian side, and how much on the United States side?

Mr. RICKEY.—That is a subject that is under investigation at the present time.

7-8 EDWARD VII., A. 1908

The proposed power house on the Canadian side would have a capacity of approximately 50,000 horse-power. That power, gentlemen, is the same power as in the city of Minneapolis, a town of 300,000 people. It is more than the combined power of Lowell, Lawrence and Manchester put together. When we say 50,000 horse-power it does not convey much of an idea. It is like speaking of \$10,000,000. It is when you come to analyze it that it means something which will supply all this adjacent territory upstream and at Cornwall for many years to come.

Mr. SMITH.—50,000 horse-power?

Mr. RICKEY.—Yes.

CHAIRMAN.—How much on the United States side?

Mr. RICKEY.—There have been no estimates made. I have men now gauging the river to determine the amount of water. Until we know the amount of water we can neither get the exact head under which the plants will operate, nor can we determine how much power will be available.

The CHAIRMAN.—It will be much larger though.

Mr. RICKEY.—Yes.

Mr. MACPHERSON.—How much are you going to raise the level in the neighbourhood of Barnhart island? Is it necessary to have any side dams to prevent the drowning of lands or the diversion of the river into other channels?

Mr. RICKEY.—As a general thing the banks are very steep, so that the overflow of land is comparatively little. I presume that later on a member of the Long Sault Development Company will state exactly what lands have been acquired by the United States Company, and also we can ascertain the amount of land that has been acquired by the St. Lawrence Power Company. Answering the question in a general way, the pond will be raised five feet above the present level of the Cornwall canal.

Mr. MACPHERSON.—Above the present level of the river?

Mr. RICKEY.—Above the present level of the river at the end of Barnhart island, about 40 feet.

Mr. MACPHERSON.—Head?

Mr. RICKEY.—40 foot head. I wish it to go on record that that is not exact. As I said a while ago, those computations are being made, and it involves a great deal of labour.

Mr. MACPHERSON.—Are any side dams required? Any dykes?

Mr. RICKEY.—Yes. There is a dyke here, and so marked on the map. There is a dyke adjoining the Canadian power house. That is the dyke to which I referred a while ago, that will be 100 feet wide on top, built under the specifications and approval of the Canadian Government.

Mr. MACPHERSON.—That is the only dyke?

Mr. RICKEY.—That is the only dyke.

Mr. MACPHERSON.—On either side of the river?

Mr. RICKEY.—Yes.

Mr. W. B. MACAULEY.—There is a question occurs to me here. The various dams that are being put up, as I understand, will cause the chief, if not the entire body of water to come apparently into the Canadian channel. How much will that raise the water summer and winter.

Mr. RICKEY.—Approximately 40 feet above.

Mr. MACAULEY.—What is the rise in the winter of the water of the river down here. (power house)?

Mr. RICKEY.—I cannot answer that question exactly, in a general way; it is about 15 feet in the average winter.

## SESSIONAL PAPER No. 19b

Mr. MACAULEY.—My reason for asking that question is this—it did not occur to me before, but hearing the remarks made here—the difficulty of getting a supply, that is of using the canal water in winter, is owing to the frazile ice blocking up the fall of the canal water, and in that way preventing it being of use. Now, if this is to raise the water higher in winter, then we shall be compelled to utilize all winter the power from further up. What I mean is this. At the present time the supply of power by the St. Lawrence Company in the winter is entirely done away with during the time that the block water below, from the ice that accumulates there, prevents the frazile ice going away; and it raises the water so high as to be equally as high, or about as high as the water in the canal. The result is that we cannot use the water of the canal, and have to fall back upon the power that the St. Lawrence Company supplies. Now comes the question, will this raise the water during the whole winter, and in that way prevent our utilizing the water of the canal, and compelling those using the canal water to fall back upon the St. Lawrence Power Co. for power for the whole winter.

Mr. RICKEY.—In answer to that question, I will repeat the remarks which I made a short time ago relative to the formation of frazile ice opposite the town of Cornwall; the ice being formed in the Long Sault rapids dams up the water at and above Cornwall and backs up in the tail race of your mills, if you please. When these dams are constructed the formation of frazile ice will be very greatly diminished and the damming up, at the head of Lake St. Francis or in your tail race will be very much less, and you will have a very much better condition under this regime than you have now.

Mr. MACAULAY.—Why?

Mr. RICKEY.—Because it is the fazile ice that forms the ice dam down there and backs the water up your tail race. If we do not have the frazile ice the tail race water will not back up, and it is the backing up of the tail race water that diminishes the head in your plant.

Mr. DAVIS, (President of the Long Sault Development Co.,)—I think Mr. Macaulay's conception is that the present tail race comes in at the proposed high level. The fact is the tail races of the various companies utilizing the power on that canal go in below not above those dams, so that whatever water goes in above those dams makes no difference.

Mr. E. O'CALLAGHAN (Cornwall).—The formation of this frazile ice is just opposite the town of Cornwall. When it freezes below Cornwall it has a different effect from above. You cannot guide the formation of this frazile ice except just as it is formed in the fall. Seasons differ.

Mr. COWIE.—What is the drop from Lake Ontario to the Sault Rapids?

Mr. MARCEAU.—I think it is a couple of feet.

Mr. COWIE.—Will not this back up Lake Ontario?

Mr. RICKEY.—The pond that we propose will back the water up to the head of Croil island. That being the case the current at present at Farran's point will be greatly diminished, which will be a decided benefit to navigation.

CHAIRMAN.—Will it affect the level farther than Farran's point?

Mr. RICKEY.—I cannot answer those questions directly. There are so many details that I cannot bear in mind.

CHAIRMAN.—Would that have an injurious effect?

Mr. RICKEY.—It would be an advantage if we could get the water down here at the low season. If we could back up Lake Ontario at the high water and get the water down here at the low water it would be an advantage to navigation?

Mr. STEWART.—The fall between Lake Ontario and the head of the Cornwall water is somewhere about 45 feet.

CHAIRMAN.—Are there any other questions, or does anybody else desire to address the Commission?

Mr. C. J. SMITH.—I would like to have the estimated cost of this plant—both development companies combined.

Mr. FOSTER.—As our engineer has already told you, we are not in a position to-day to say to this meeting, nor to our own associates, what the cost of this is going to be, and there may be some difference in the actual cost of it and the estimates we make of it; but the probability is that so far as the Canadian end of it is concerned it means an expenditure roughly in the neighbourhood of \$5,000,000.

Mr. RICKY.—That is the expenditure in Canadian territory.

Mr. FOSTER.—By the Canadian Company in Canadian territory, which is the only place where they are going to spend any money, and in the purchase of the lands which we have already acquired, and flowage rights, etc., which are in the neighbourhood of something like \$100,000.

CHAIRMAN.—Are there any other questions, or does anybody desire to hear further from the promoters of this scheme?

Mr. MARCEAU.—I would like to correct a statement I made just now about the drop between Lake Ontario and this plant. When I said two feet I meant at the head of the rapids. This is considerably lower than the head of the rapids. I am not prepared to say what would be the fall from Lake Ontario to this point.

Mr. CAMPBELL.—The town of Cornwall is represented here by a delegation appointed at a meeting of the Board of Trade of Cornwall, which has 200 members, and this resolution was unanimously passed, and the delegation was sent down to support the scheme.

‘ Moved by N. J. Fraid, Vice President.

‘ Seconded by J. A. Macdougal.

‘ That whereas the Cornwall Board of Trade have learned that a meeting of the International Waterways Commission, Canadian Section, is to be held at the City of Montreal, on the sixth day of November, at 10 o'clock A.M., for the purpose of presenting before those interested in the navigation of the St. Lawrence, the proposal of the contemplated works of the St. Lawrence Power Company at the Long Sault rapids in the vicinity of the town of Cornwall.

‘ And whereas the Cornwall Board of Trade feel that the development of the water power at or near the town of Cornwall would be greatly in the interests of the town of Cornwall, county of Stormont, and the eastern portion of the province of Ontario.

‘ Therefore the Cornwall Board of Trade authorizes and empowers the following representatives from among their number to attend at said meeting and to advocate for and urge upon the Commission the importance of assisting in the development of power at or near Cornwall.

E. CAMPBELL,  
*President.*

F. BISSETT,  
*Secretary Cornwall Board of Trade.*

Mr. CAMPRELL.—Mr. Smith, a member of the Board of Trade, will speak on behalf of the Cornwall board.

Mr. ROBERT SMITH (Cornwall).—Mr. Chairman and gentleman, I do not know that I can add very much to what is already stated in the resolution; but I may say that the town council of Cornwall have passed, as I understand, the same resolution, and I think the Mayor is here. From the point of view of the town of Cornwall—which as you know is a somewhat large manufacturing town—the development of power is a very important question. As conditions prevail there now, we are deriving a certain amount of water power, for the running of the mills, directly from the Cornwall canal. Power is also developed for other purposes, such as street railway, electric lighting, &c. One of the difficulties that the owners of those powers have to contend with at the present time is the back water, that has been alluded to. That back water

## SESSIONAL PAPER No. 19b

rises to a very great height at times in Cornwall, sometimes as high as 50 feet. We have had the town flooded. Of course, when the back water comes up, there is no power, and those mills and other industries must have supplemental steam plants to run their factories during that time. Except that reasonable supplementary supply, the power has been obtained from the St. Lawrence Power Company, which in some places has taken the place of steam plants. The proposed scheme will greatly benefit the existing powers as I understand it, from an engineering point of view by reason of preventing this ice from going down and creating a dam. At all events it is represented by the engineers in a technical way that that ice dam at Cornwall will be prevented, and in that way the head of the present power developed at the canal will not be obstructed in winter, and the result will be that the power will be continual the year round. That is a very important consideration from that standpoint. Beyond that the power at Cornwall is limited. There is not, I understand, a single horse-power available in addition to what is now being used, even from the St. Lawrence Power Company. That is, they have already sold all the power that they can develop under present conditions.

Mr. CHAIRMAN.—About how much is that?

Mr. FOSTER.—1,250 horse-power.

Mr. ROBERT SMITH.—That places the town of Cornwall in a very awkward position. We are not in a position to offer any inducements in the way of power to any manufacturer coming to Cornwall. Therefore, any one can see the vast importance of any scheme that will develop 50,000 horse-power right in the neighbourhood of the town. We will then be in a position to offer inducements to industries coming to the town, which can only now develop power by means of steam.

The MAYOR OF CORNWALL said: It was understood by the council and the Board of Trade that Mr. Robert Smith, who has just spoken, would represent us.

The CHAIRMAN.—Are there any others to be heard in support of this proposal? Are there any who desire to say anything in general criticism, in opposition or otherwise?

Mr. MARCEAU.—I have been directed to come before the board on behalf of the Department of Railways and Canals, and I have written here a little statement:—

'The department has no particular opinion to express with regard to the proposed power project, in favour of it, at any rate, at the present time. But it is opposed to it as exposed through the press.'

'No plans were submitted to this department to enable an intelligent opinion to be formed.'

'In the absence of full working plans, showing exactly what is contemplated, the only action we can take is to object to the International Waterways Commission giving the proposed company any rights on the St. Lawrence and to oppose any interference with the river's regimen as established.'

The CHAIRMAN.—Have you made this report to the minister?

Mr. MARCEAU.—No, I did not make this report; I was directed by the chief engineer to come before this meeting and impress that.

The CHAIRMAN.—I would like to hear everybody on this subject. In opening this meeting I forgot to mention and I mention it now for fear anybody would go away—that we want the representatives of the Montreal Board of Trade and all interested in navigation to remain with us either when we finish this morning, or this afternoon, to hear a still more important matter about which we propose to consult you—the proposed dam in the Niagara river. The principle there is the same. It is conceded that it must not be built if it will be injurious to navigation in the Lower St. Lawrence, but if it can be built so as to improve navigation without injury below, it should be done. But it is so important a matter that I mention it now so that no one who is interested in any way in navigation may go away. Are there any other repre-

7-8 EDWARD VII., A. 1908

sentatives of the Montreal Board of Trade who will address us on the subject of the power development in the St. Lawrence?

Mr. ESDALE.—As chairman of the navigation committee of the Board of Trade I heard with a great deal of interest the details of this scheme. The council of the Board of Trade associated with me in this matter James A. Tuttle, manager of the Montreal Transportation Company, who is better posted on the river, and I will ask him to speak. I would like to impress the fact that the board has always taken a strong stand that the government should not sanction any work in any way or shape on the river that would in any way interfere with the waterways for inland or oversea traffic. The government have already spent millions on our international waterways, and we feel very strongly that before anything should be done it should be gone into in the most thorough manner, so that there would be no danger of a fraction of the water being taken away from the waterways.

Mr. TUTTLE.—I feel a little embarrassed, because I am neither an engineer nor have I the technical knowledge necessary to address you on this subject. I think what Mr. Esdale says is the main point of the Board of Trade. They do not wish in any way to hamper any trade or the development of any scheme that will be for the improvement of the navigation of Canada. On the other hand if this be permitted to go through we may find that the St. Lawrence, east of Cornwall, is down some three or four inches. Now it is quite true that by damming this stream theoretically the same water will go over the top and the same depth of water will be below. I understand that it does not always occur. When these dams are put in a certain small amount of water gets drained off by canals in some way not accounted for, and the same amount of water does not run over, that ran in a free manner. The result is that the lowering of the water in Lake St. Louis or Lachine rapids, where we are forced to use 13 ft. 10 in. is going to affect navigation in a very serious manner—not only for river vessels, in which I am interested, but lake vessels, and all traffic coming through from the great lakes. The government have been good enough to give us a 14-foot channel, and we utilize it. Suppose it is reduced to 13 ft. 9 in. or 13 ft. 6 in., it is going to cut the vessel's load down, right down from Fort William or Duluth, as the case may be, to Montreal. I think the St. Lawrence Power Company—I am not trying to find particular fault with them—are not friendly to navigation. Rather, over every vessel passing through the canal, they hold, I think, one of the greatest menaces in Canada to-day. They have a contract with the government for 80 or 90 or 100 years by which they are obliged to pull every vessel in and out of each lock. This may not be the place to bring it up, but this is the company that holds the contract, and I think we should deal very carefully, and very slowly, and employ the most expert man that can be found, as no doubt yourselves and the government will do, before any permission is granted to this company. They are to-day making almost a tail race out of the Lachine canal from their own works to the head. What they are not doing the balance of the manufacturers along the canal are doing. You take lock 17 in that canal. I think the west weir there has diverted more vessels, caused more accidents, and caused the insurance companies more loss than probably any place outside of the entrance to Farrans point canal on the River St. Lawrence. As I understand it, these canals, and these channels that were dug were principally for navigation. They are not for water-power schemes; and the navigation should be protected. The scheme they have to-day of drawing vessels in and out of the Cornwall canal is delaying us at least from 10 to 12 hours to pass through that canal, where we should do it in 3, and it seems there is no means of getting quit of this for ninety years, when we will all be dead. (Laughter.) Now, I think we ought to go a little slow in granting any greater powers. If they dam up the south side opposite Farran's point there, as I understand it, it will force vessels that to-day use Farren's point canal, or rather that have been using the slide, to go outside. It is going to increase the current there, and it will force vessels to go through the canal, all sizes.